REMARKS

In the Office Action, the Examiner rejected claim 16 under 35 U.S.C. § 112, first paragraph; rejected claims 40 and 45 under 35 U.S.C. § 102(e) as anticipated by Mahany (U.S. Patent No. 6,018,555); rejected claims 1-3, 10, 17, 18, and 24-26 under 35 U.S.C. § 103(a) as unpatentable over Moulsley (U.S. Patent No. 6,407,993) in view of Brickman et al. (U.S. Patent No. 4,328,543); rejected claims 4-7, 27, and 28 under 35 U.S.C. § 103(a) as unpatentable over Moulsley in view of Brickman et al. and Kolze et al. (U.S. Patent No. 6,285,681); rejected claims 8, 9, 11-13, 29, 30, 38, and 39 under 35 U.S.C. § 103(a) as unpatentable over Moulsley in view of Brickman et al. and Jasper et al. (U.S. Patent No. 5,533,004); rejected claims 14, 15, 19-23, and 31-37 under 35 U.S.C. § 103(a) as unpatentable over Moulsley in view of Brickman et al. and Dove et al. (U.S. Patent No. 6,310,891); rejected claim 16 under 35 U.S.C. § 103(a) as unpatentable over Moulsley in view of Brickman et al. and Tayebi et al. (U.S. Patent No. 6,373,827); and rejected claims 41-44 under 35 U.S.C. § 103(a) as unpatentable over Mahany in view of Kolze et al.

By this Amendment, Applicants cancel claim 2 and amend claims 1, 3, 15, 16, 18, 24-30, 34, and 38 to improve form. Applicants respectfully traverse the Examiner's rejections with regard to the currently pending claims. Claims 1 and 3-45 are pending.

In paragraph 2 of the Office Action, the Examiner rejected claim 16 under 35 U.S.C. § 112, first paragraph, for allegedly containing subject matter that is unsupported by the specification. In particular, the Examiner alleged that the specification does not provide support for a spare section that includes a third plurality of time slots (Office Action, paragraph 2). Applicants traverse the rejection. The third plurality of time slots is implicitly described at page 33, lines 20-21, and illustrated in Fig. 5. Nevertheless, Applicants have amended claim 16 to

remove this feature. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection.

In paragraph 4 of the Office Action, the Examiner rejected claims 40 and 45 under 35 U.S.C. § 102(e) as allegedly anticipated by Mahany. Applicants respectfully traverse the rejection.

Mahany discloses a modified preamble used in a communication network to facilitate antenna diversity and multipath compensation (Abstract). An antenna diversity protocol first directs a mobile transceiver to select a satisfactory antenna that enables successful receipt and identification of at least a portion of the preamble (Abstract). Once a satisfactory antenna is identified, the diversity protocol extracts from received portions of the preamble information necessary to determine whether there is enough preamble remaining to conduct a best antenna search (Abstract). If the diversity protocol determines that there is not enough remaining preamble to conduct the best antenna search, the protocol directs the mobile transceiver to use the currently selected satisfactory antenna to receive the remainder of the communication packet (Abstract). To provide an indication of remaining preamble, the preamble is either marked with at least one time stamp or contains at least two identifiably distinct preamble portions (Abstract).

By contrast, the present invention recited in claim 40, for example, includes a combination of features of a traffic burst for a burst mode communications link. The traffic burst includes a preamble portion and a data portion that follows the preamble portion. The preamble portion includes a first unique word, a second unique word, and a data/spare section in between the first unique word and the second unique word. The data/spare section defines a preamble split length. The data portion contains data.

A proper rejection under 35 U.S.C. § 102 requires that a single reference teach every aspect of the claimed invention either expressly or impliedly. Any feature not directly taught must be inherently present. In other words, the identical invention must be shown in as complete detail as is contained in the claim. See M.P.E.P. § 2131. Mahany does not disclose or suggest each of the features recited in claim 40. For example, Mahany does not disclose a data/spare section located in between a first unique word and a second unique word.

The Examiner alleged that Mahany discloses the data/spare section as the second portion (n bits) of preamble 1115 illustrated in Fig. 11 (Office Action, paragraph 4). Applicants disagree. Mahany discloses a second portion of preamble (i.e., n bits of preamble) located in between first and second unique words (Fig. 11). Mahany discloses that this second portion of preamble is used by a receiver to register its capability with all associated transmitters (col. 14, lines 63-66). In the examples illustrated in Figs. 12 and 13, Mahany shows the second portion of the preamble as including identical bits to the first portion of the preamble and a bit sequence for performing adaptive equalization, respectively (col. 15, lines 26-31; col. 16, lines 21-27). Therefore, Mahany's second portion of the preamble is not equivalent to the data/spare section recited in claim 40.

For at least these reasons, Applicants submit that claim 40 is not anticipated by Mahany. Independent claim 45 recites features similar to the features described above with regard to claim 40. Claim 45 is, therefore, not anticipated by Mahany for reasons similar to those given with regard to claim 40.

For at least the foregoing reasons, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 40 and 45.

In paragraph 6 of the Office Action, the Examiner rejected pending claims 1, 3, 10, 17, 18, and 24-26 under 35 U.S.C. § 103(a) as allegedly unpatentable over Moulsley in view of Brickman et al. Applicants respectfully traverse the rejection.

Moulsley discloses a TDMA frame structure that is suitable for downlink transmissions from a primary station to a secondary station (col. 3, lines 39-41). The frame structure includes multiple frames, each of the same duration, that include a sync sequence indicating the start of the frame and a header followed by one or more data bursts and possibly a null transmission (col. 3, lines 44-48).

Brickman et al. discloses a frame format that includes a fixed time period allocated for transmission of network control and synchronization information and for transmission of traffic from active earth stations to one or more other earth stations in the network (col. 6, lines 26-30). A frame is divided into two segments: a control field and a traffic field (col. 6, lines 30-32).

By contrast, the present invention recited in amended claim 1, for example, includes a combination of features of a multi-modulation mode air interface frame format. The frame format includes an overhead portion, a plurality of overhead bursts, a traffic portion, and a plurality of traffic bursts. The overhead portion includes a first plurality of time slots. The overhead bursts are located within respective ones of the first plurality of time slots and are transmitted using a first of a plurality of modulation modes. The first modulation mode includes a lowest order modulation mode of the plurality of modulation modes. The traffic portion includes a second plurality of time slots following the first plurality of time slots. Ones of the plurality of traffic bursts are located within one or more of the second plurality of time slots. Each of the plurality of traffic bursts are modulated using one of the plurality of modulation modes.

Neither Moulsley nor Brickman et al., whether taken alone or in any reasonable combination, discloses or suggests this claimed combination. For example, neither Moulsley nor Brickman et al. discloses or suggests an overhead portion that includes a first plurality of time slots transmitted using a first of a plurality of modulation modes, where the first modulation mode includes a lowest order modulation mode of a plurality of modulation modes.

The Examiner alleged that Brickman et al. discloses an overhead section divided into time slots ("channels") with overhead bursts (Office Action, paragraph 6). While not acquiescing in the Examiner's allegation, Applicants submit that Brickman et al. does not disclose that these alleged overhead bursts are transmitted using a first modulation mode that includes a lowest order modulation mode of a plurality of modulation modes, as recited in amended claim 1.

When rejecting now canceled claim 2, the Examiner alleged that Moulsley discloses that the header can contain multiple forms of modulation (citing column 4, lines 55-62 of Moulsley), which allegedly indicates that it is a design choice of whether to use only one form of modulation (Office Action, paragraph 6). Applicants submit that the Examiner's allegation lacks merit.

At column 4, lines 55-62, Moulsley discloses:

> Since some of the information in the header H will be required by distant secondary stations it will need to be robustly transmitted, with significant redundancy. A solution which reduces the total redundancy is to partition the header blocks with differing levels of coding (or modulation). Two partitions are probably sufficient, where modulation schemes are referred to in one of the partitions (but not both). It may be desirable for the header H to include a length indicator and some error detection, such as CRC.

Nowhere in this section, or elsewhere, does Moulsley disclose modulating an overhead portion using only one modulation mode, much less a first modulation mode that includes a lowest order modulation mode of a plurality of modulation modes, as recited in amended claim 1. Instead,

Moulsley discloses something quite different; i.e., partitioning the header with different levels of modulation (col. 4, lines 57-62).

For at least the foregoing reasons, Applicants submit that claim 1 is patentable over Moulsley and Brickman et al., whether taken alone or in any reasonable combination. Claims 3, 10, and 17 depend from claim 1 and are, therefore, patentable over Moulsley and Brickman et al. for at least the reasons given with regard to claim 1. Claims 3, 10, and 17 are also patentable for reasons of their own.

For example, claim 3 recites that the first modulation mode includes quadrature phase shift keying. Neither Moulsley nor Brickman et al. discloses or suggests this feature. The Examiner alleged that Moulsley discloses the use of quadrature phase shift keying for distant receivers and robust transmission of header information and cited column 4, lines 12-16 and 55-62, of Moulsley for support (Office Action, paragraph 6). Applicants disagree. Nowhere in these sections, or elsewhere, does Moulsley disclose or suggest modulating an overhead portion using quadrature phase shift keying. In fact, Moulsley discloses something quite different. Moulsley discloses robust transmission of header information that includes partitioning the header with differing levels of modulation (col. 4, lines 55-62). For at least these additional reasons, Applicants submit that claim 3 is patentable over Moulsley and Brickman et al., whether taken alone or in any reasonable combination.

Amended independent claims 18 and 24 recite features similar to the features described above with regard to claim 1. Claims 18 and 24 are, therefore, patentable over Moulsley and Brickman et al., whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 1. Claims 25 and 26 depend from claim 24 and are, therefore,

patentable over Moulsley and Brickman et al. for at least the reasons given with regard to claim 24.

For at least the foregoing reasons, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1, 3, 10, 17, 18, and 24-26.

In paragraph 7 of the Office Action, the Examiner rejected claims 4-7, 27, and 28 under 35 U.S.C. § 103(a) as allegedly unpatentable over Moulsley in view of Brickman et al. and Kolze et al. Applicants respectfully traverse the Examiner's rejection.

Claims 4-7 depend from claim 1. The disclosure of Kolze et al. fails to cure the deficiencies in the disclosures of Moulsley and Brickman et al., as described above with regard to the features of claim 1. For example, Kolze et al. does not disclose an overhead portion that includes a first plurality of time slots transmitted using a first of a plurality of modulation modes, where the first modulation mode includes a lowest order modulation mode of a plurality of modulation modes, as recited in amended claim 1. Instead, Kolze et al. discloses overhead fields that include a guard time, a ramp up, a preamble, a BRF byte, a sequence number, a FEC parity, and a ramp down (Abstract; Figs. 2-5).

Therefore, claims 4-7 are patentable over Moulsley, Brickman et al., and Kolze et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 1.

Claims 27 and 28 depend from claim 24. The disclosure of Kolze et al. does not cure the deficiencies in the disclosures of Moulsley and Brickman et al. with regard to the features of claim 24. Therefore, claims 27 and 28 are patentable over Moulsley, Brickman et al., and Kolze et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 24.

For at least the foregoing reasons, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 4-7, 27, and 28.

In paragraph 8 of the Office Action, the Examiner rejected claims 8, 9, 11-13, 29, 30, 38, and 39 under 35 U.S.C. § 103(a) as allegedly unpatentable over Moulsley in view of Brickman et al. and Jasper et al. Applicants respectfully traverse the Examiner's rejection.

Claims 8, 9, and 11-13 depend from claim 1. The disclosure of Jasper et al. fails to cure the deficiencies in the disclosures of Moulsley and Brickman et al., as described above with regard to the features of claim 1. For example, Jasper et al. does not disclose an overhead portion that includes a first plurality of time slots transmitted using a first of a plurality of modulation modes, where the first modulation mode includes a lowest order modulation mode of a plurality of modulation modes, as recited in amended claim 1. Therefore, claims 8, 9, and 11-13 are patentable over Moulsley, Brickman et al., and Jasper et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 1.

Claims 29 and 30 depend from claim 24. The disclosure of Jasper et al. does not cure the deficiencies in the disclosures of Moulsley and Brickman et al. with regard to the features of claim 24. Therefore, claims 29 and 30 are patentable over Moulsley, Brickman et al., and Jasper et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 24.

Amended independent claim 38 recites features similar to the features described above with regard to claim 1. As explained above, the disclosure of Jasper et al. does not cure the deficiencies in the disclosures of Moulsley and Brickman et al., as described above with regard to the features of claim 1. Therefore, claim 38 is patentable over Moulsley, Brickman et al., and

Jasper et al., whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 1.

Claim 39 depends from claim 38 and is, therefore, patentable over Moulsley, Brickman et al., and Jasper et al. for at least the reasons given with regard to claim 38.

For at least the foregoing reasons, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 8, 9, 11-13, 29, 30, 38, and 39.

In paragraph 9 of the Office Action, the Examiner rejected claims 14, 15, 19-23, and 31-37 under 35 U.S.C. § 103(a) as allegedly unpatentable over Moulsley in view of Brickman et al. and Dove et al. Applicants respectfully traverse the Examiner's rejection.

Claims 14 and 15 depend from claim 1. The disclosure of Dove et al. fails to cure the deficiencies in the disclosures of Moulsley and Brickman et al., as described above with regard to the features of claim 1. For example, Dove et al. does not disclose an overhead portion that includes a first plurality of time slots transmitted using a first of a plurality of modulation modes, where the first modulation mode includes a lowest order modulation mode of a plurality of modulation modes, as recited in claim 1. Therefore, claims 14 and 15 are patentable over Moulsley, Brickman et al., and Dove et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 1.

Independent claim 19 recites a combination of features of a multi-transport mode air interface frame format. The frame format includes an overhead portion, a plurality of overhead bursts, a traffic portion, a plurality of traffic bursts, and a plurality of transport mode signals. The overhead portion includes a first plurality of time slots. The overhead bursts are located within respective ones of the first plurality of time slots. The traffic portion includes a second plurality of time slots following the first plurality of time slots. Respective ones of the plurality

of traffic bursts are located within one or more of the second plurality of time slots. Respective ones of the plurality of transport mode signals are contained within respective ones of the plurality of traffic bursts.

When rejecting this claim, the Examiner alleged that Moulsley discloses the overhead portion, the traffic portion, and the traffic bursts (Office Action, paragraph 9). The Examiner further alleged that Brickman et al. discloses the overhead bursts and Dove et al. discloses the transport mode signals (Office Action, paragraph 9). The Examiner then alleged that it would have been obvious to use a frame format that includes both TDM and ATM modes and an overhead portion that includes a plurality of time slots with overhead bursts "so as to delineate the information contained in the overhead, and to enable transmission of a range of multimedia services including telephone, video and computer data" (Office Action, paragraph 9). Applicants traverse the Examiner's rejection.

When rejecting a claim under 35 U.S.C. § 103, the Examiner must provide a factual basis to support the conclusion of obviousness. In re Warner, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967). Based upon the objective evidence of record, the Examiner is required to make the factual inquiries mandated by Graham v. John Deere Co., 86 S.Ct. 684, 383 U.S. 1, 148 USPQ 459 (1966). The Examiner is also required to explain how and why one having ordinary skill in the art would have been led to modify an applied reference and/or combine applied references to arrive at the claimed invention. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988).

In establishing motivation, it has been consistently held that the requisite motivation to support the conclusion of obviousness is not an abstract concept, but must stem from the prior art as a whole to impel one having ordinary skill in the art to modify a reference or combine

references with a reasonable expectation of successfully achieving some particular realistic objective. See, for example, Interconnect Planning Corp. v. Feil, 227 F.2d 1132, 227 USPQ 543 (Fed. Cir. 1985). Consistent legal precedent admonishes against the indiscriminate combination of prior art references. Carella v. Starlight Archery, 804 F.2d 135, 231 USPQ 644 (Fed. Cir. 1986); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 USPQ 657 (Fed. Cir. 1985).

With these principles in mind, the Examiner has not explained how and why one of ordinary skill in the art at the time of Applicants' invention would have been motivated to combine the various features of Moulsley, Brickman et al., and Dove et al. Indeed, Applicants believe that it would not be reasonable to combine features of a method for scheduling time division multiplexed cells in a synchronous optical network (SONET) frame (Dove et al.) with a time division multiple access (TDMA) frame structure of a satellite communication system (Brickman et al.) and with a TDMA frame structure of a cellular radio system (Moulsley).

The only apparent motivation for combining the references is found in Applicants' own disclosure which, of course, may not properly be relied upon to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103. Absent such impermissible hindsight reasoning, one of ordinary skill in the art, having the Moulsley reference, would not have been motivated to modify the reference in the manner suggested by the Examiner.

Further, none of the references suggests the modification of references set forth by the Examiner. For example, Dove et al. provides no reason for combining the SONET frame features with the TDMA frame structure of Moulsley. Brickman et al. also provides no reason for combining their TDMA frame features with the TDMA frame structure of Moulsley. Therefore, the Examiner's combination of the references is improper.

Accordingly, Applicants submit that independent claim 19 is patentable over Moulsley, Brickman et al., and Dove et al., whether taken alone or in any reasonable combination.

Claims 20-23 depend from claim 19 and are, therefore, patentable over Moulsley, Brickman et al., and Dove et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 19.

Claims 31-34 depend from claim 24. The disclosure of Dove et al. fails to cure the deficiencies in the disclosures of Moulsley and Brickman et al., as described above with regard to the features of claim 24. Therefore, claims 31-34 are patentable over Moulsley, Brickman et al., and Dove et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 24.

Independent claim 35 recites features similar to the features described above with regard to claim 19. Therefore, claim 35 is patentable over Moulsley, Brickman et al., and Dove et al., whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 19.

Claims 36-37 depend from claim 35 and are, therefore, patentable over Moulsley, Brickman et al., and Dove et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 35.

For at least the foregoing reasons, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 14, 15, 19-23, and 31-37.

In paragraph 10 of the Office Action, the Examiner rejected claim 16 under 35 U.S.C. § 103(a) as allegedly unpatentable over Moulsley in view of Brickman et al. and Tayebi et al. Applicants respectfully traverse the Examiner's rejection.

Claim 16 depends from claim 1. The disclosure of Tayebi et al. fails to cure the deficiencies in the disclosures of Moulsley and Brickman et al., as described above with regard to the features of claim 1. For example, Tayebi et al. does not disclose an overhead portion that includes a first plurality of time slots transmitted using a first of a plurality of modulation modes, where the first modulation mode includes a lowest order modulation mode of a plurality of modulation modes, as recited in claim 1. Therefore, claim 16 is patentable over Moulsley, Brickman et al., and Tayebi et al., whether taken alone or in any reasonable combination, for at least the reasons given with respect to claim 1.

For at least the foregoing reasons, Applicants respectfully request the reconsideration and withdrawal of the rejection of claim 16.

In paragraph 11 of the Office Action, the Examiner rejected claims 41-44 under 35 U.S.C. § 103(a) as allegedly unpatentable over Mahany in view of Kolze et al. Applicants respectfully traverse the Examiner's rejection.

Claims 41-44 depend from claim 40. The disclosure of Kolze et al. fails to cure the deficiencies in the disclosure of Mahany, as described above with regard to the features of claim 40. For example, Kolze et al. does not disclose a data/spare section in between a first unique word and a second unique word, as recited in claim 40. Therefore, claims 41-44 are patentable over Mahany and Kolze et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 40.

For at least the foregoing reasons, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 41-44.

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's reconsideration of the application and the timely allowance of pending claims 1 and 3-45.

If the Examiner does not believe that all pending claims are now in condition for allowance, the Examiner is urged to contact the undersigned to expedite prosecution of this application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-0383 and please credit any excess fees to such deposit account.

Respectfully submitted,

HUGHES ELECTRONICS CORPORATION

41,254

John T. Whelan
Reg. No. 32,448

Date: 6/20/03

Bldg 001, M/S A109
PO Box 956
El Segundo, California 90245
301-428-7172

PATENT
Attorney Docket NO.: PD-990149
Customer No.: 020991

I hereby certify that the attached correspondence is being deposited with the United States Postal Service via First Class Mail addressed to the Commissioner for Patents, Alexandria, VA 22313-1450 on June 20,2003.

Ginger Fogle

Ginger Fogle